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# UTILITY PATENT APPLICATION TRANSMITTAL

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Attorney Docket No. 81230.56US1

First Inventor: Hayes, et al.

Title Customizable and Upgradeable Devices  
and Methods Related Thereto

Express Mail Label No. EI248899671US

## APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☐ \*Fee Transmittal Form (e.g., PTO/SB/17)  
(Submit an original and a duplicate for fee processing)

2. ☒ Specification [Total Pages 41]

(preferred arrangement set forth below)  
-Descriptive title of the Invention  
-Cross Reference to Related Applications  
-Statement Regarding Fed sponsored R&D  
-Reference to Microfiche Appendix  
-Background of the Invention  
-Brief Summary of the Invention  
-Brief Description of the Drawings (if filed)  
-Detailed Description  
-Claim(s)  
-Abstract of the Disclosure

3. ☒ Drawing(s) (35 U.S.C. 133) [Total Sheets 19]

4. Oath or Declaration [Total Pages 3]

a. ☒ Newly executed (original or copy)  
b. ☐ Copy from a prior application (37 C.F.R. § 1.63(d))  
(for continuation/divisional with Box 16 completed)

i. ☐ DELETION OF INVENTOR(S)  
Signed statement attached deleting inventor(s) named in  
the prior application, see 37 C.F.R. §§ 1.63(d)(2) and  
1.33(b).

\*NOTE FOR ITEMS 1 & 13: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A  
SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN  
A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28)

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5. ☐ Microfiche Computer Program (Appendix)  
6. Nucleotide and/or Amino Acid Sequence Submission  
(if applicable, all necessary)

a. ☐ Computer Readable Copy  
b. ☐ Paper Copy (identical to computer copy)  
c. ☐ Statement verifying identity of above copies

## ACCOMPANYING APPLICATION PARTS

7. ☐ Assignment Papers (cover sheet & document(s))

8. ☐ 37 C.F.R. § 3.73(b) Statement ☐ Power of Attorney  
(when there is an assignee)

9. ☐ English translation Document (if applicable)

10. ☐ Information Disclosure ☐ Copies of IDS  
Statement (IDS)/PTO-1449 Citations

11. ☐ Preliminary Amendment

12. ☒ Return Receipt Postcard (MPEP 503)  
(Should be specifically itemized)

13. ☐ \*Small Entity ☐ Statement filed in prior  
Statements application, Status still  
(PTO/SB/09-12) proper and desired

14. ☐ Certified Copy of Priority Document(s)  
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15. ☐ Other:

16. ☐ If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:

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## 17. CORRESPONDENCE ADDRESS

☐ Customer Number or Bar Code Label ☐ Correspondence address  
(Insert Customer No. or Attach bar code label here)

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State

Illinois

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Country U.S.A.

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Signature

John E. Hyatt

Date:

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In re application of: Hayes, et al.  
Title: Customizable and Upgradeable Devices and Methods Related Thereto  
Docket No.: 81230.56US1

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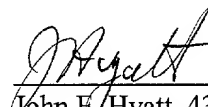
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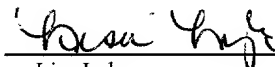
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By:

  
Lisa Lyle

**APPLICATION FOR  
UNITED STATES LETTERS PATENT**

Be it known that we, Patrick H. Hayes of 22981 Arija, Mission Viejo, CA, Marcus Escobosa, 507 Diamond Road, Placentia, CA, and James N. Conway, Jr., 427 Morning Canyon Road, Corona Del Mar, CA have invented new and useful "Customizable and Upgradable Devices and Methods Related Thereto."

002720 E 245F950

## TITLE

### Customizable and Upgradable Devices and Methods Related Thereto

## FIELD OF THE INVENTION

10           The present invention relates to hand-held electronics and control modules, as well as electronic commerce related to these products. Specific exemplary embodiments discussed relate to hand-held remote controls.

## BACKGROUND OF THE INVENTION

15           The description of art in this section is not intended to constitute an admission that any patent, publication or other information referred to herein is "prior art" with respect to this invention, unless specifically designated as such.

20           While the present invention relates to hand-held electronics and control modules generally, it will be better understood within the discussion of exemplary embodiments directed toward remote controls generally, and universal remote controls specifically. Universal remote controls typically offer a preprogrammed set of standardized keys for each device type supported. These provide for the common operational functions of the device but do not necessarily offer the full range of features available on the original manufacturer's  
25           remote.

5 U.S. patents and applications relevant to remote control technology include U.S. Pat.  
Nos. 5,515,052; 5,255,313; and U.S. Pat. App. Ser. No. 09/418,091 filed October 14, 1999,  
which are incorporated herein by reference. Pat. '052 discloses a universal remote control  
with function syntheses. The remote control comprises driver circuitry for communicating  
code signal generation sequences including a code generated command signal followed by  
10 a code setting signal; and memory for storing information therein. Pat. '313 discloses a  
universal remote control system having a signal generator to transmit signals which will  
cause specific functions to occur in specific controlled devices. Pat. App. Ser. No. '091  
discloses means and methods for operating a remote control.

15 Users of universal remote controls who need access to one or more functions not  
preprogrammed into the unit must then use a learning capability or a feature, such as a  
function synthesizer (e.g., the function synthesizer discussed in Pat. '052) to add the desired  
extra functions to their remotes. Other U.S. Patents related to remote control technology, and  
in particular, relating to learning technology include U.S. Pat. Nos. 4,959,810; 5,228,077;  
20 and 5,537,463, which are incorporated herein by reference.

Pat. '810 discloses means for transferring instructions and/or data to RAM wherein  
the instructions and/or data is transferred from a source external to the RAM. Pat. '077  
discloses a remotely upgradable universal remote control. Pat. '463 discloses means in the  
remote control for picking up an electro-magnetic signal from an electro-magnetic signal  
25 source and storing output signal data in memory. The output signal data stored in memory

5 may correspond to control function data which may be transmitted to a device to be controlled.

While the above described technologies may allow users to ultimately reach the desired level of functionality, the technologies and methods often suffer from significant drawbacks. For example, learning is generally only possible if the original remote control is available -- if the original remote control is lost or broken, a learning system generally cannot be used. Another problem is that function synthesizer codes must generally be obtained from a live customer service representative for the specific brand and model of device the user owns. This requirement to interface with a live merchant or supplier, often results in greater cost. Also, both learning and synthesizer data require storage space in the remote control's nonvolatile memory. The nonvolatile memory can become full. This limits the amount of learned or synthesized data which can be stored. For example, a combination of programmed command sets may be required to obtain the desired functionality, but only a portion of the command set is loadable. The remaining sets may not be able to be loaded onto the remote control because the portion of command sets has already filled the memory. Therefore, all desired sets of preprogrammed data may not fit in memory. Additionally, key legends, (e.g., identifications) on the remote control, do not generally indicate the added functions. The more one attempts to customize a remote, the more difficult key identification becomes. The user must remember where each function was placed.

25

5 In practice, many users do not bother to program their remote control. They either learn to live "mildly dissatisfied" with the remote control "as is" or abandon the universal concept entirely in favor of purchasing the same brand of equipment across the board and using that manufacturer's (i.e., brand of) unified remote. This preference for single-brand use has been shown through use of focus groups in which the participants indicated that they  
10 owned only one brand of equipment for exactly this reason -- difficulty in programming.

### SUMMARY OF THE INVENTION

As the invention is in part directed toward e-commerce, U.S. Patent No. 6,029,141, which is directed to an Internet-based system, is incorporated herein by reference. Readers  
15 will find the discussion of the terms and acronyms particularly useful. However, Pat. '141, is incorporated for all that it teaches.

The present invention addresses the above shortcomings of the universal remote control product by allowing the user to configure and purchase a personally customized remote control either via a Web site or through a computer located in the dealer's store, for  
20 example.

Accordingly, the present invention teaches a method of providing a customized remote control. A database including a plurality of functions for a consumer electronic  
25 device is provided. A user is enabled to select among the plurality of functions at least one desired function. The user is then allowed to virtually configure the customized remote

5 control, whereby a virtual configuration is created. The virtual configuration is then downloaded to the customizable remote control to transform the customizable remote control into a customized remote control. A similar process may be used to transform an upgradable remote control to an upgraded remote control. These steps may generally be repeated as desired.

10

The customizable remote control, in one embodiment, comprises a case and a plurality of preprogrammed standard keys on the case. A plurality of configurable keys are included on the case. The remote control also includes a plurality of customized labels (or in some embodiments, customizable labels) corresponding to the plurality of configurable keys. The customizable remote control may also include means for assigning at least one function to at least one of the plurality of configurable keys.

15

Another objective of the present invention is to provide a simplified user interface. In a preferred embodiment the simplified user interface is repeatedly customizable to match a user's changing tastes and needs. The simplified user interface may comprise a remote control having a touch screen for accessing basic functionality and customized functionality and for selectively customizing one or more keys.

20

It will be apparent from the teachings disclosed herein that a customized consumer electronic device may be provided via a Web site. The user is allowed (and therefore, enabled as well) to access the Web site and select among a plurality of functions performable

25

5 by the consumer electronic device. The user is also allowed (through provision of appropriate instructions in the remote or via the Web that provide operative capability) to create a virtual configuration for the consumer electronic device by selecting at least one of the plurality of functions. In a preferred embodiment, the customized consumer electronic device is a remote control, and the functions include control functions for controlling another  
10 consumer electronic device, e.g., a DVD player.

A method of modifying a remote control taught herein includes providing a database of function command codes, wherein the database is accessible to a user. Included in the database of function command codes is a plurality of command sets comprising function  
15 command codes corresponding to a respective plurality of consumer electronic devices. That is, the database preferably has a corresponding command set for each device. A Web site is maintained that enables a user to select at least one of the plurality of command sets via the Web site. The user is then enabled to download the at least one of the plurality of command sets.

20 A hand-held device may be upgraded according to a method of the present invention. In a preferred embodiment, a user is provided with a selection including a plurality of command codes maintained in a database. The database comprises command codes operable with the hand-held device. The user is enabled to download at least one of the plurality of  
25 command codes provided in the selection.

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5 Another object of the present invention is to provide one with the ability to perform design trade-offs on a hand-held device and have a customized hand-held device provided according to those trade-offs. A further objective is to allow the ultimate user to be the one performing the design trade-offs.

10 Another object of the present invention is to provide a more efficient manufacturing and distribution system wherein the involvement of intermediate distributors is minimized. A further object of the present invention relates to providing hand-held control devices.

15 Other objects and advantages in accordance with the present invention will be apparent to those of skill in the art from the teachings disclosed herein.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

20 In the interest of enabling one of skill in the art to practice the invention, exemplary embodiments are shown and described. For clarity, details apparent to those of skill in the art and reproducible without undue experimentation are generally omitted from the drawings and description.

Fig. 1 schematically depicts a method of providing a customizable hand-held device according to an embodiment of the present invention.

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Fig. 2 depicts a home page of a Web-based download center.

5            Fig. 3 depicts a sign-on screen for a supplier's Web site whereby access to downloadable functions may be obtained.

          Figs. 4(a)-4(b) depict parts 1 and 2, respectively, of a selection screen. The scroll bar is adjusted to move the page up and down in the browser frame.

10

          Fig. 5 depicts the selection screen of Fig. 4 after selections have been made. For clarity the screen snap shot is centered on the selections.

          Fig. 5a depicts a remote control with a touch screen. Multiple code sets for a single  
15        brand and device type are shown with means for determining the operable code set.

          Fig. 5b depicts a customization screen where the user may configure his desired remote control key function assignment.

20            Fig. 6 depicts a download screen including instructions for downloading command code upgrades.

          Fig. 7 depicts a payment screen.

5            Fig. 8 depicts an image representing a customizable remote control including preprogrammed keys and configurable keys. The labeling means comprises printable (or pre-printed) labels.

Fig. 9 depicts the remote control of Fig. 8 with configured keys indicated.

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Fig. 10 depicts an embodiment of a configurable remote control wherein the labeling means comprises label strips.

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Fig. 11 depicts a customizable remote control including a display screen, wherein the labeling means includes the display screen if so programmed.

Fig. 12 depicts a remote control incorporating a touch screen.

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Fig. 13 depicts the touch screen remote control of Fig. 12 displaying secondary pages for accessing additional functions.

Figs. 14-15 depict key layouts being downloaded to the corresponding touch screen remote controls.

25

Fig. 16 depicts a remote control for use in an interactive environment. The remote control is shown with a prepaid icon for accessing an event.

5 Fig. 17 schematically depicts a method of providing a user with a hand-held device.

### DESCRIPTION OF EXEMPLARY EMBODIMENTS

The present invention is discussed in relation to remote controls, however, other uses will be apparent from the teachings disclosed herein. The present invention will be better understood from the following detailed description of exemplary embodiments with reference to the attached drawings, wherein like reference numerals and characters refer to like parts, and by reference to the following claims.

In one embodiment a manufacturer builds a "base" remote control (e.g., customizable remote control). The keypad of the remote will preferably include a small set of basic functions expected to be required by everyone (e.g., volume, channel, digits, and power) together with a number of blank keys (e.g., configurable keys). Provision will be made on the remote to custom label these blank keys, either via a stick-on overlay, or by some kind of transparent cover under which a paper insert can be placed, or by other compatible methods. The remote may then be sold at retail to the ultimate consumer who logs onto a Web site from home (or via a computer in a store) and enters the data on his particular devices (e.g., type, brand, model). Note that access to the data need not be confined to a path through a Web site, but may, for example, be via a direct connection (e.g., a dedicated computer or dedicated line). If the consumer is not sure about specific brand or model information of devices he wants to control, he can, for example, take the remote home and determine the desired device code by experimentation using the basic pre-programmed

5 functions. These so-called step-and-set programming methods and other methods to identify the device of interest are well covered in the patents discussed above (and incorporated by reference).

10 In an alternative embodiment, the table of functions presented to the user comprises a subset of all possible functions available for the particular set-up code, said subset being automatically determined based on model number information entered by the user. For example, the total code set available for a given manufacturer (brand) format may include functions for controlling a TV picture-in-picture feature. However, if it is known that the user's particular model does not offer this feature, then the choices offered the user can be  
15 simplified by omitting these codes.

Once the devices are defined (identified), the customer is then presented with a series of screens, one for each device mode, for example, each screen showing an outline of the remote together with a table of all functions available for that particular set-up code. Using  
20 a "drag and drop" interface, for example, the user configures the blank keys on the displayed remote to contain the specific functions he desires. When completed, the computer then downloads the user's custom configuration into the remote (using a serial cable, a magnetic modem such as described in Pat. '463, or any other suitable interface).

25 For convenience, the user may print a label set to be installed on the remote. In an alternative labeling approach, the computer could transmit the label data (preferably as a part





5 The sign-on screen 36 includes a location 38 for receiving a unique identifier 40 of the customized remote control 10 (or upgradable remote control). In some embodiments, the function or code selection may be provided based upon the identifier 40 of the remote 10. The unique identifier 40 requested in Fig. 3 is the serial number of the remote control.

10 It will be appreciated that, in general, a Web site such as is shown in Figs. 2 through 7 can be used for multiple purposes. Examples of such purposes are downloading new device types or functions, extending features, upgrading code libraries and the like, in addition to offer users an ability to create customized remote control configurations. The discussions that follow, however, will focus primarily on the customization capabilities of  
15 such a site.

Figs. 4(a) and 4(b) show parts 1 and 2, respectively, of a selection screen 42. Figs. 4(a) - 4(b) show a selection 44 of a plurality of consumer electronic device types, such as satellite receivers, T.V.'s, VCR's, etc. The user 16 is provided with a brand selection 46 for  
20 each type of the selection 44 of the plurality of electronic device types. Each brand selection 46 is provided via a pull down brand menu 48.

To, in part, avoid overloading memory in the customizable remote control 10, the user is provided with a memory indicator 50 indicating, preferably on a percent basis, how  
25 much memory is available in the remote 10 for adding another (or the first) device type/brand combination selection to the virtual configuration for downloading. Memory usage may be

5 maintained locally via a "cookie" process or remotely, e.g., at the supplier's site. In another  
embodiment, the indicator 50 represents the amount of memory the download will use  
without regard to the amount of data already stored in memory. This may also be presented  
without regard to the capability of the particular remote being modified. As Figs. 4(a) and  
4(b) are shown prior to the user making a selection, the memory indicator 50 is shown empty.

10

Fig. 5 shows the selection page 42 after brand selection has been made for some of  
the device types. The memory indicator 50 shown in Fig. 5 now indicates the amount of  
memory the virtual configuration (the download) will take. Preferably the memory indicator  
50 will also indicate the available memory for storing the virtual configuration.

15

In the event that the brand requested has multiple possible sets of IR function codes  
(for example, a brand such as Sears<sup>TM</sup> or Radio Shack<sup>TM</sup> may include private label products  
produced by several different manufacturers), an embodiment of the invention can include  
a step in which multiple basic (non-customized) sets of IR codes are first downloaded into  
the remote and presented to the user to allow him to determine via experimentation which  
code is applicable to his specific device. This embodiment is particularly useful when the  
user does not have his device model number available, or the model number provided is not  
recognized by the system.

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Fig. 5a illustrates such a multiple code set embodiment. The remote 10a shown has  
been loaded (via, for example, a download process or memory installation process) with four



5 functions onto the remote control display 22 as desired. In the example shown, the remote is displayed with certain common function pre-selected (digit keys, power) and key functions the user has already added ("TV/Video", "Sleep", "SRS", and "Hue+") to be available on this remote. Fig. 5b shows the user is in the process of dragging the function "Hue-" across his remote key layout 23. When complete, the user moves to the next step, downloading this custom configuration into his remote 10, by clicking the "Next" button 66b shown. In 10 different embodiments, the pre-selection of common functions may be omitted to allow the user complete flexibility. Alternatively, these may be selectable as "groups" of functions instead of individual keys (for example, the digits 0 through 9, volume up/down and mute, etc.). Note that while the example shown in Fig. 5b and described above is for a remote control with an LCD touch screen capability, it should be appreciated that the configuration 15 process for a "hard button" remote, such as shown in Figs. 8 - 9, is essentially the same. Likewise for other types of touch screens.

Fig. 6 shows a download screen 52. In the embodiment shown, the download screen 20 52 displays instructions 54 for downloading, during a setup mode, an upgraded code selection via the speakers of the computer. If sufficient memory is available, the user 16 may download additional command sets, either separately or in a single download. In this manner, the remote 10 may be upgraded as well as customized.

25 Fig. 7 depicts a payment screen 56. In some embodiments, the payment information 58 is associated with the unique identifier 40 of the hand-held device, whereby the user 16

5 need only enter the payment information once, preferably, per device to be customized or upgraded. In other embodiments the one-time-entered payment information is protected via a personal-identification-number (PIN) system, for example.

Referring to Fig. 1, newly configured keys 60 are preferably indicated (see also Fig. 9). Configurable keys 62 are preferably also displayed. Note that generally the configured keys 60 are a subset of the configurable keys 62. However, in some embodiments, the keys are "one-time" configurable and thereby removed from the set of configurable keys after they are configured. In some embodiments, the one-time configurable keys may still be configured multiple times by, for example, replacing memory cards or chips, etc. In one embodiment, the configurable keys are displayed with the configured, or assigned, function 64 in an assignment table 66.

Figs. 8-10 depict a configurable remote control 100. The configurable remote control 100 may be a customizable remote control 10 or an upgradable remote control, for example. Fig. 11 depicts a configurable remote control 100A which is an embodiment similar to that shown in Figs. 8-10. The configurable remote control 100 includes a plurality of preprogrammed standard keys 102, a plurality of configurable keys 104 and means for assigning at least one function to at least one of the plurality of configurable keys 104. The means for assigning at least one function preferably includes means for providing the user 16 with access to the database 12 of the plurality of functions 14.



5 alternatively, comprise the display screen 120. An alternative embodiment uses a remote  
such as remote control 100B incorporating a touch screen LCD 122 as shown in Figs. 12 and  
13. In this implementation, the included basic functionality is provided on one screen, or  
page, 122A shown in Fig. 12, while the user selected configurable key functions are  
presented in one or more secondary pages 122B, accessible via a button 124 on the first page  
10 122A, as shown in Fig. 13.

In yet another embodiment of a universal remote control, it is considered  
advantageous if the key layout of the universal remote could closely match that of the  
original remote control supplied with the user's equipment. On a conventional (i.e. hard key)  
15 universal remote, this is, of course, not possible and on these units the (fixed) key layout  
represents the manufacturer's best compromise at a layout suitable for as many different  
brands/models of original equipment as possible. Even in a remote control of the type with  
an LCD display and touch screen input, though the unit may have the physical capability to  
display a different set of key shapes/layouts for every brand/model of original equipment  
20 remote control, practical limitations prevent supporting all code combinations. For example,  
the large amount of memory that would be required to store all the different key shapes and  
layouts corresponding to every possible device model and type to be supported generally is  
not practical for most applications. Plus, such a unit, even if practical, would at best only  
have layouts for those items of consumer electronics (CE) equipment that existed at the time  
25 the unit was manufactured, and would still require generic screen layouts to support devices  
whose layouts are not in it's library. (Note that many CE manufacturers will use the same

5 IR codes from model to model or year to year, even though remote designs and layouts may  
change.)

However, if individual screen layouts were available on a Web site where a consumer  
could browse by, e.g., brand/model until he found a matching picture of his original remote  
10 control. He could then download into the universal remote a corresponding key arrangement  
and memory capacity would thus not be an issue since only the layouts corresponding to the  
consumer's current equipment need to be stored in the remote. Examples of this approach --  
original remote 126 and 126' and corresponding layout on an LCD remote 128 and 128' --  
are shown in Figs. 14 and 15, respectively.

15 In yet another embodiment of a remote control with display capability, the user  
accesses a Web site to download not the device IR command codes themselves, but rather  
sequences of pre-programmed instructions to perform various operations. These may include  
items such as channel tuning command sequences to facilitate tuning to a particular program  
20 on TV; pre-defined sequences for setting up or configuring consumer entertainment  
appliances and equipment; private access codes or numbers for use in an interactive TV  
environment, whereby one-time premium series such as sports events or pay-per-view moves  
are activated; and other applications.

25 In an example of pre-programmed instruction, a user who has just purchased a new  
home theater audio amplifier may be instructed to log onto a particular Web site where, after

Another example is discussed with reference to an interactive TV environment. A user might log onto a Web and browse a menu of available premium programming offers -- sports events, recent movies, etc. In order to purchase items, the user after providing a credit card number or similar method of payment, has downloaded into his remote control an logo/icon for display on the remote LCD, together with a numeric code to be transmitted to the interactive TV (or STB) when that icon is touched. The numeric code transmitted has the effect of validating the consumer's purchase of the program and "unlocking" the receiver to allow access to it. Fig. 16 shows how such an item might appear on the remote 130 when, in this case, the user had pre-purchased the pay-per-view (PPV) movie "Desert Antics". In this depiction, the pre-paid icon 132 appears next to the same screen as the regular channel changing buttons, alternatively these paid purchase icons (PPIs) can be displayed on a separate page reserved partly or entirely for the function.

It will be appreciated that while the above descriptions and examples are presented with reference to a remote control including LCD display capability, other types of devices are also suitable: for example, PDAs of the type marketed under the trademarks Palm™.

5 Handspring™, and others, especially when equipped with aftermarket IR remote control hardware and/or software such as is available from vendors such as Pacific Neo-Tek, Inc.

Referring to Fig. 1, a complimentary, or alternative, method of providing a hand-held device, or a component related thereto, to the user 16 is schematically shown. The supplier,  
10 through a predetermined process 200 creates a product 202 which is then transported, i.e., shipped, via transport 204, to a predetermined location 206. In a preferred embodiment, the predetermined location 206 is not only accessible to the user 16, but is co-located with the user computer 24. In alternative embodiments, the predetermined location 206 may be a store accessible to the user 16. The store may also comprise the user computer 24. The  
15 method may also be used to ship the labels 108, for example, or a permanent pre-printed mylar label, for example, or even the customizable remote control 10 or a component of the remote for later installation. The remote 10 may be shipped pre- or post-downloading the virtual configuration and pre- or post-installation of the virtual configuration.

20 Fig. 17 schematically depicts another approach for providing a customer 16 with a hand-held device 210. The customer 16 interfaces with the computer 212 which is connected to the Internet 28. Via the Internet 28 the customer 16 provides the first supplier site 214 with a preferred configuration (also referred to as a preferred virtual configuration). The preferred configuration may include case design, function programming, as well as key  
25 assignment, for example. The preferred configuration is downloaded, or preferably burned, into a chip 216, for example. The first supplier 214 ships the chip 216 to a predetermined

5 location 218, which is preferably a third supplier site 220. The preferred configuration may  
also be transmitted to a second supplier site 222 wherein the second supplier provides a case  
224, which in various preferred embodiments may be an LCD remote control such as shown  
in Figs. 11 or 12 or a hard key remote control such as shown in Fig. 8. The second supplier  
then ships the case 224 to the third supplier site 220. The third supplier then assembles the  
10 components (216 and 224) and ships the hand-held device 210 to a second predetermined site  
226, the second predetermined site being accessible to the customer 16, and preferably being  
the home or business, for example, of the customer 16. The designations of first, second, etc.  
are merely used for convenience and are not intended to indicate limitations of the invention  
or order in an inventive process. Also, the sites may be separated or colocated, depending  
15 on the application. It should also be appreciated that the customer in this context is not  
necessarily the final end user of the device -- he may, for example, be a store proprietor or  
original equipment manufacturer ("OEM") ordering one or more devices for resale.

While the invention has been particularly shown and described with reference to  
20 particular embodiments thereof, it will be understood by those skilled in the art that various  
changes in form and detail may be made therein without departing from the spirit and scope  
of the invention. The scope of the claimed invention is intended to be defined by following  
claims as they would be understood by one of ordinary skill in the art with appropriate  
reference to the specification, including the drawings, as warranted.

## CLAIMS

The invention claimed is:

1. A method of selecting command codes for use in a remote control, the method comprising:

displaying to a user at a client computer a plurality of operations capable of

10

being performed by a consumer electronic device; and

in response to a user selecting one of the displayed plurality of operations at the client computer, selecting from a database accessible to a server computer a command code that will cause the consumer electronic device to perform the selected operation when transmitted from the remote control.

15

2. The method of claim 1, comprising the step of displaying an image representing the remote control.

3. The method of claim 2, wherein the step of displaying the image representing the remote control comprises the step of indicating newly configured keys.

20

4. The method of claim 2, wherein the step of displaying the image representing the remote control comprises the step of indicating configurable keys.

25

5. The method of claim 1, comprising the step of displaying a selection comprising a plurality of consumer electronic devices to the user.

5           6.       The method of claim 5, comprising the step of selecting a particular consumer electronic device manufactured by a particular manufacturer in response to a selection by a user from a plurality of manufacturers.

10           7.       The method of claim 1, wherein the step of displaying comprises transmitting a Web page from the server computer to the client computer, the Web page having information for displaying to the user the plurality of operations.

15           8.       The method of claim 1, comprising the step of transmitting the command code for downloading to the remote control.

            9.       The method of claim 8, wherein the step of transmitting the command code comprises the step of transmitting the command code to a user selected location.

20           10.      The method of claim 9, wherein the step of transmitting comprises the step of transmitting the command code to the client computer.

            11.      The method of claim 8, wherein the step of transmitting the command code comprises the step of transmitting the command code to a predetermined location.

25           12.      The method of claim 8, comprising the step of providing customized labeling.

5 13. The method of claim 12, wherein the step of providing customized labeling comprises the step of shipping the customized labeling from a predetermined location.

14. The method of claim 8, comprising the step of providing pre-printed labeling.

10 15. The method of claim 8, comprising the step of shipping the customized remote control to a predetermined location.

16. The method of claim 8, comprising the step of shipping the customized remote control to a user selected location.

15 17. The method of claim 1, comprising the step of generating a customized label for indicating to the user a mapping between a key of the remote control and the command code.

20 18. The method of claim 1, comprising the step of transmitting a code sequence to the client computer to re-configure a portion of the customized remote control.

5        19.    A customizable remote control comprising:  
  
             a case;  
  
             a plurality of pre-programmed standard keys on the case;  
  
             a plurality of configurable keys on the case; and  
  
             a plurality of electronically generated customized labels corresponding to the  
10        plurality of configurable keys.

             20.    A customizable remote control comprising:  
  
             a plurality of pre-programmed standard keys;  
  
             a plurality of configurable keys;  
15        means for assigning at least one function to at least one of the plurality of  
             configurable keys; and  
  
             means for labeling the configurable keys.

             21.    The remote control of claim 20, wherein the means for labeling comprises computer  
20        generated labeling fitted in a recess.

             22.    The remote control of claim 20, comprising means for representing a user selected  
key layout.

25

5 23. A method of providing a customized consumer electronic device comprising the steps  
of:

transmitting a Web page for displaying to a user a plurality of operations  
performable by the consumer electronic device and information for mapping at least  
one of the operations to a key on the consumer electronic device;

10 receiving from the user a selection of one of the operations and an  
identification of a key to which the operation is to be mapped;

forming a virtual configuration comprising the operation selection and key  
identification, whereby the virtual configuration is useable in the consumer electronic  
device.

15

24. The method of 23, comprising placing the virtual configuration in a transmission and  
transmitting the virtual configuration to a user selection location.

20

25. The method of 23, comprising placing the virtual configuration in a transmission for  
transmission to a microchip for subsequent installation into the to be customized consumer  
electronic device.

25

26. The method of claim 23, comprising the step of shipping a customizable consumer  
electronic device to a predetermined location, wherein the customizable consumer electronic  
device is the customized consumer electronic device prior to customization.

5 27. The method of claim 26, wherein the step of transmitting comprises programming the virtual configuration into a microchip and the method comprises the steps of:

shipping the microchip to the predetermined location; and

installing the microchip in the customizable consumer electronic device.

10 28. A method of allowing a user to customize a remote control capable of commanding operation of a consumer electronic device, the method comprising:

transmitting a Web page for displaying to a user a plurality of operations performable by the consumer electronic device and information for use in mapping an operation to a key on the remote control;

15 receiving from the user a selection of one of the plurality of operations and an identity of a key on the remote control to which the selection operation is to be mapped; and

selecting code from a database for configuring the remote control to cause the transmission of a command that causes the consumer electronic device to perform the selected operation when the selected key is activated.

20

5 29. A method of selecting command codes for use in a remote control, the method comprising:

receiving a message having information indicative of an operation capable of being performed by a consumer electronic device; and

10 in response to the message, selecting from a database for installation into the remote control a command code that will cause the consumer electronic device to perform the operation when transmitted from the remote control.

30. A method of selecting command codes for use in a remote control, the method comprising:

15 presenting to a user a plurality of operations capable of being performed by a consumer electronic device;

receiving from the user information pertaining to a method of payment; and

20 in response to a verification of the method of payment, selecting from a database for installation in the remote control a command code that will cause the consumer electronic device to perform the selected operation when transmitted from the remote control.

5 31. A method of modifying a remote control comprising the steps of:

displaying to a user at a client computer a plurality of command sets  
corresponding to a respective plurality of consumer electronic devices;

10 in response to a user selection of at least one command set, selecting from a  
database a plurality of command codes operable with the respective consumer  
electronic device to form the at least one command set; and

creating a transmission including the at least one command set for allowing  
the command set to be downloaded to the remote control.

15 32. The method of claim 31, comprising the step of displaying an indication of how much  
memory will be used if the at least one of the plurality of command sets is downloaded.

33. The method of claim 32, wherein the step of displaying the indication comprises the  
step of displaying the indication as a percentage of memory of the remote control being  
modified.

20 34. The method of claim 33, wherein the step of displaying the indication comprises  
displaying the indication as a percentage of available memory.

25

displaying to a user at a client computer a selection comprising a plurality of the command codes; and

in response to a selection by the user of at least one of the plurality of command codes provided in the selection, forming a transmission including the at least one command code for ultimate use in the hand held device.

10

a hand held unit having a display screen;

memory communicable with the display screen and including at least three programming sets for respectively controlling at least three devices, wherein at least two of the at least three programming sets are associated with a common brand; and

15

set up programming in the unit for enabling a user to select at least one of the at least three programming sets during a set up mode, wherein the at least two programming sets associated with the common brand are represented in a prioritized order.

20

accessing a database via a Web site that includes information for displaying  
 ability of functions;

25

selecting at least one of the functions; and

downloading the function.

5 38. A method of enabling a user to customize a remote control, the method comprising the steps of:

in response to a user selection, selecting among a plurality of functions at least one desired function; and

forming a virtual configuration including the at least one desired function.

10

39. A method of enabling a user to customize a remote control, the method comprising the steps of:

displaying a graphical user interface for enabling the user to select at least one function operable with the remote control; and

15

creating a transmission including the at least one function for ultimate use of the one function by the remote control.

40. A remote control kit comprising:

a customizable remote control including a plurality of configurable keys;

20

labeling means for identifying the configurable keys; and

means for customizing the remote control including a user accessible display displaying a plurality of customizable features, by which the user may configure the configurable keys.

25

5        41.     A device for use with a customizable remote control, the device comprising:  
                  a writable medium; and  
                  a user selected virtual configuration stored in the writable medium.

                 42.     A customizable remote control comprising:  
 10                   means for accessing a Web page to ultimately configure configurable keys of  
                  the remote control; and  
                  means for labeling the configurable keys.

                 43.     A method of configuring a remote control comprising the steps of:  
 15                   a user accessing a Web page;  
                  a user selecting at least one function from the Web page; and  
                  a user requesting that the function be downloaded to the remote control to  
                  configure the remote control.

20        44.     A remote control comprising:  
                  a touch screen displaying graphical user interfaces; and  
                  programming for displaying the graphical user interfaces according to a  
                  predetermined priority schema.

25

5 45. A handheld user interface for use in an interactive environment, the interface comprising:

a touch screen;

means for displaying on the touch screen an icon representing a purchased product or service;

10 means for receiving a code associated with the purchased product or service, wherein the code provides access to the purchased product or service; and

means for transmitting the code to gain access to the purchased product or service upon actuation of the purchase icon.

15 46. A method of customizing a user's device having a display screen, the method comprising the steps of:

receiving from a user information identifying an original equipment manufacturer's (OEM) device;

determining a face layout corresponding to the OEM device;

20 selecting from a database simulation programming operable with the user's device, wherein the simulation programming is adapted to simulate the face layout on the display screen of the user's device.

47. The method of 47, wherein the user's device is a handheld remote, the face layout  
25 comprises a key layout corresponding to the OEM device, and wherein the step of selecting comprises selecting command codes associated with keys represented in the key layout.

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5 52. A method of enabling access to a pay-per-event, the method comprising the steps of:  
displaying to a user at a client computer a selection of a plurality of events;  
receiving payment associated with at least one of the selections; and  
transmitting to a remote control a code for accessing the at least one of the  
selections.

10

53. A method of customizing a remote control, the method comprising the steps of:  
displaying to a user at a client computer a plurality of remote control  
parameters for customizing the remote control; and  
in response to a selection by user of at least one of the displayed remote  
control parameters, forming a virtual configuration whereby the remote control  
maybe customized.

15

**ABSTRACT OF THE DISCLOSURE**

A customizable and an upgradable remote control is provided which may be customized or upgraded via a Web site or through other remote, and preferably interactive, processes. A database is provided which includes a plurality of functions of a consumer electronic device, such as a T.V. or and DVD player. A user selects among the plurality of functions at least one of the desired functions. In response to the user selection a virtual configuration is created to virtually configure the customized remote control. The virtual configuration may be downloaded to the customizable remote control. Preferably, the customizable remote control is provided with a plurality of preprogrammed standard keys and a plurality of configurable keys. A plurality of customized labels corresponding to the plurality of configurable keys may be provided separately or printed as part of the virtual configuration download process. More generally methods for providing a customized consumer electronic device are disclosed, including a preferred embodiment using a touch screen remote control. In one embodiment a database of command codes operable with a hand-held device is maintained. A user is allowed to access the database via a Web site. The user may then download at least one of the plurality of command codes provided in the selection. The hand-held device may also be utilized in an interactive environment. Such an interactive environment may include pay-per-event access, and the like.



Figure2: Web-based download center Home page

Welcome to the EZRemote Download Center - Netscape

Home Search Netmap Print About Us  
Microsoft Office

## Welcome to the EZRemote Online Download Center

Please type your email address and serial number to login.

**Get HELP here?**

**Go to Sign In page.**

**Universal Electronics Inc.**

Email Address:

Serial Number:  **Login**

**Get HELP here.**

**UEI TECHNOLOGY**

Designed with

Copyright© 1999 Universal Electronics Inc.

36

40

38

Figure3: Sign on screen

**Web Download Setup Code Database - Netscape**

Office

Microsoft

Topline 5 Setup Code Database

EZRemate.com

Instructions

Download Selections

Requirements and Notices

Page: 64%

50

### Instructions for Download

- Select the device(s) from below and choose the brand name(s) for your download.
- Please monitor the % full gauge on the left hand side of your browser.
- If % full exceeds 100%, please de-select some devices and check the percentage again. To start over with your device selections click the "Clear All" button.
- If the brand name is listed more than once and has numbers after the name, please try the first listing of the brand name you want. If it doesn't work for your device, try the second one, and so on.
- Click the "Next" button to confirm your selection(s) and proceed with upgrading your remote control.

### Available Devices/Brands for downloading:

Device	Brand
Satellite Receivers	Select Brand
TVs	Select Brand
VCRs	Select Brand
CD Players	Select Brand
Audio Amplifiers	Select Brand
Audio Amp/Tuners	Select Brand

44 →

40

42

Next

Previous

**Figure 4a: Selection screen (part 1)**

Figure 4/b: Selection screen(part 2 )

**Figure 5: Selections made**

005720"E245F950

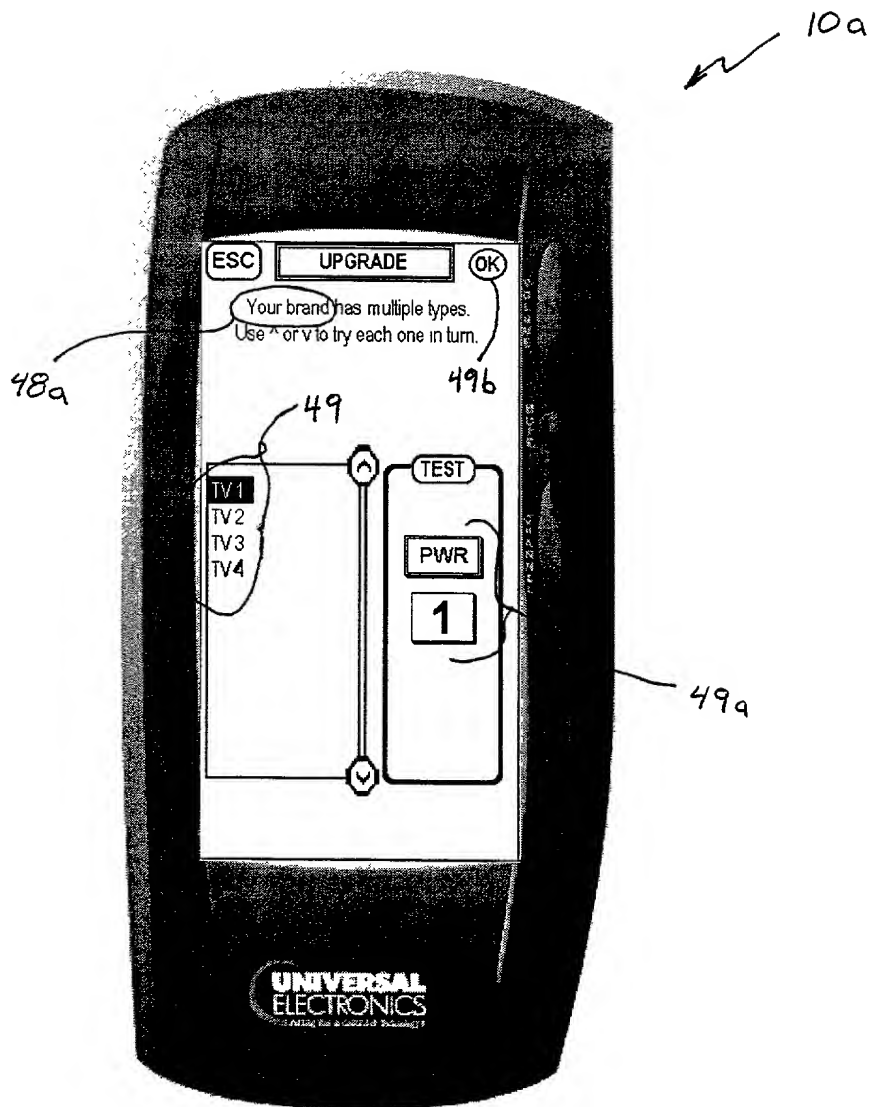


FIG. 5a

00ET20" E245T560

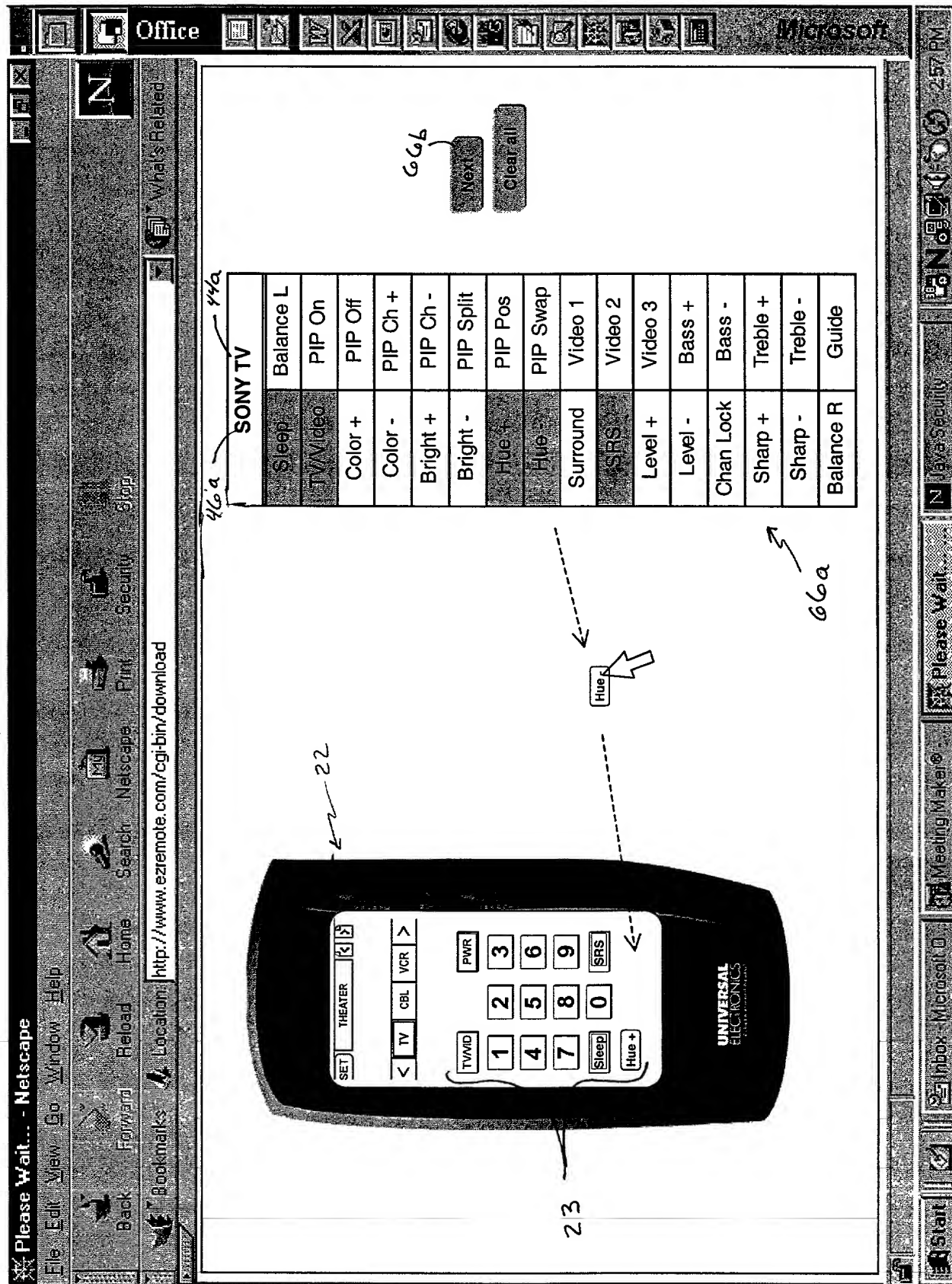
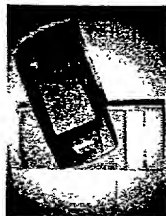



FIG. 5b

## Upgrading and Setup Instructions



52

- Before playing sound file**
- Turn the speakers' volume to half of MAX and turn the TONE to MAX (if any). If you have small speakers, it's better to turn up the volume more.
  - Press and hold the "DOWNLOAD" key on your remote. The LED will turn on.  
*Notes: The LCD and BACKLIGHT will be turned off during downloading.*
  - Place rear of the remote control on the face of speaker and try to keep it steady, keep the lower half of the remote in the center of the speaker, see the above illustration.
  - Click  to play sound file.



2. **While the sound files are playing:**
- During download, Mosaic's LED should blink periodically if codes being received are valid.
  - *Note: If the LED is off or remains on steadily, the data is invalid. In that case, press the M(mute) key to stop the download and repeat this step.*
  - After completion of the download, Mosaic's LED turns off and an upgrade screen will appear on Mosaic that contains the upgraded device codes.
3. **Completion of download:**
- Carefully read the instructions to test the devices you have selected to see if the new downloaded codes work with your remote. Test the codes for each of the devices you have selected. If none of the codes work for a specific device or for all of the selected devices, repeat step 1 and try again. If after several attempts, none of the codes work for the device(s), see the ABOUT screen for support information.

Fig 6

Welcome to the EZRemote Download Center

**If you have signed in to this web site before, please click here --> [Login](#).**

## First Time User?

**If this is your first time on our web site, please complete the form below. If you don't have the serial number for your remote, we will send you one via email. Only one serial number per product will be assigned to a user per email address.**

## About Yourself

Email Address:  \*  
 First name:  \* MI:   
 Last name:  \*  
 Street 1:   
 Street 2:   
 City:   
 State/Province:  Please select a state   
 Zip/Postal Code:   
 Country:  United States of America \*  
 Home Phone (with area code):  Extension:   
 Payment Method:  Choose Payment Method   
 Name on Credit Card:   
 Credit Card Number:  \*  
 Expiration Date:  01  2000 \*

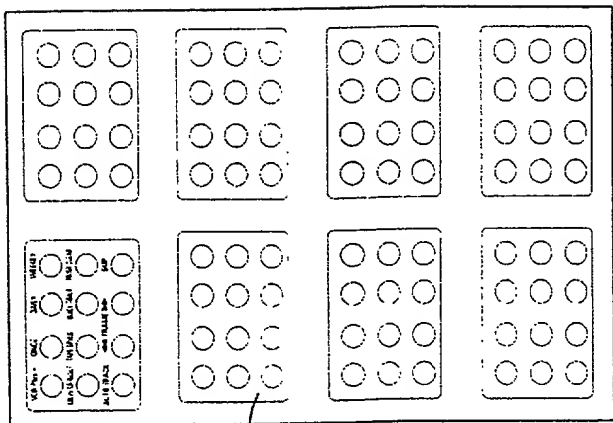
\* Indicates required information.

Fig. 17 Payment Screen

OBJECTS OF THE INVENTION

PRE-CUT LABELS ON CARRIER  
SHEETS FOR USE ON STANDARD  
COMPUTER PRINTER

114



108

PRE-PROGRAMMED  
STANDARD KEYS

102

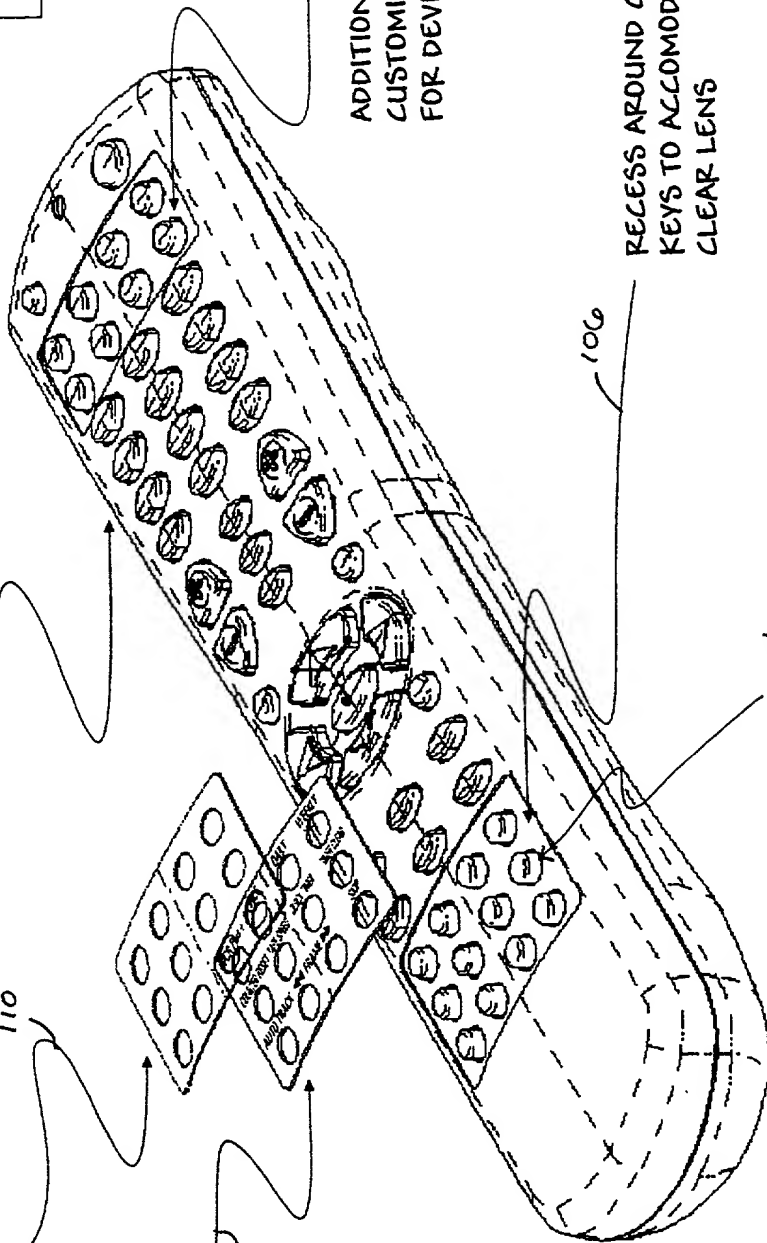
SNAP-ON CLEAR  
LENS

110

PRE-CUT  
PRINTABLE LABEL

108

100



ADDITIONAL AREA FOR  
CUSTOMIZING TYPES  
FOR DEVICE SUPPORT

RECESS AROUND CONFIGURABLE  
KEYS TO ACCOMMODATE LABEL AND  
CLEAR LENS

106

104

FIG. 8

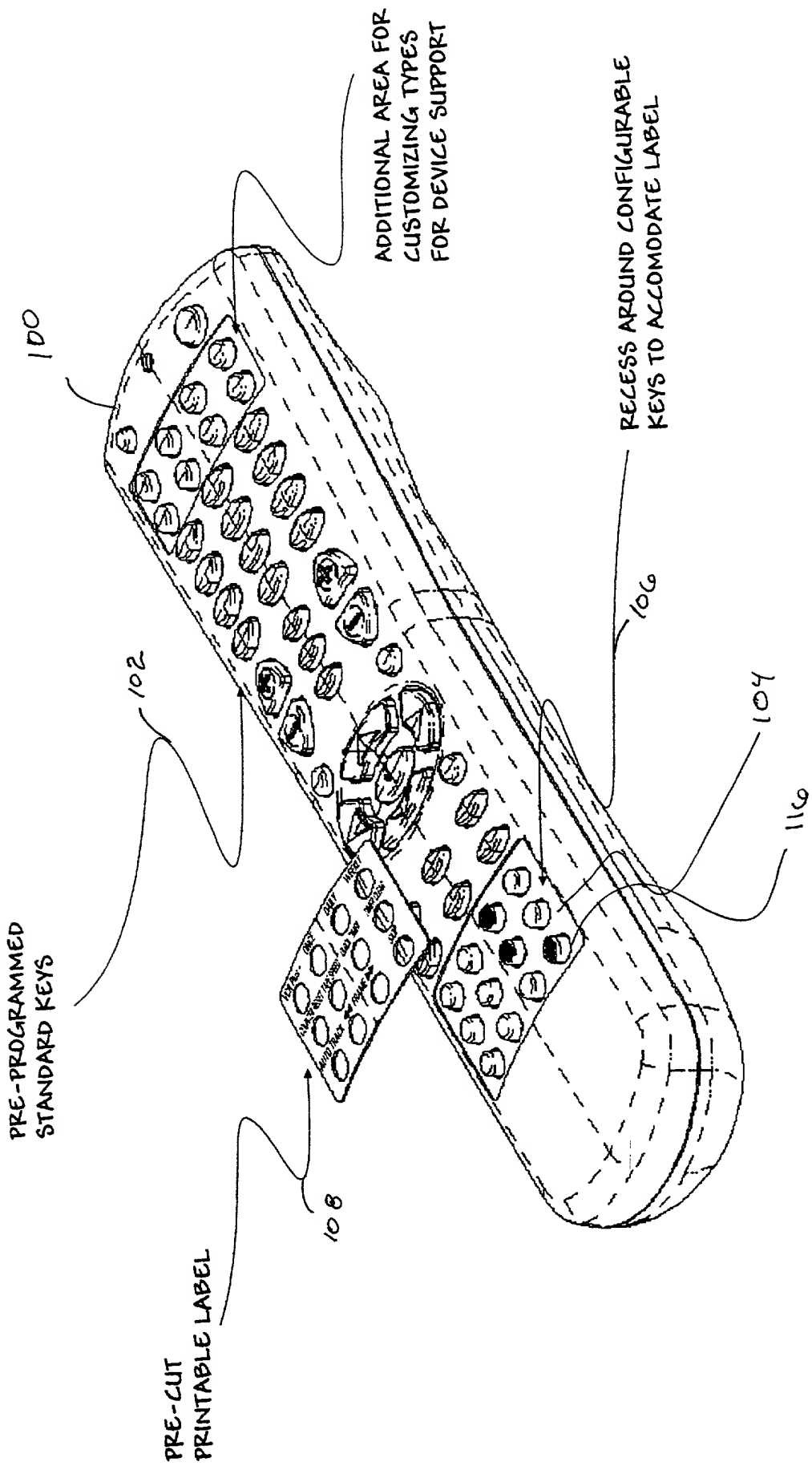


FIG. 9

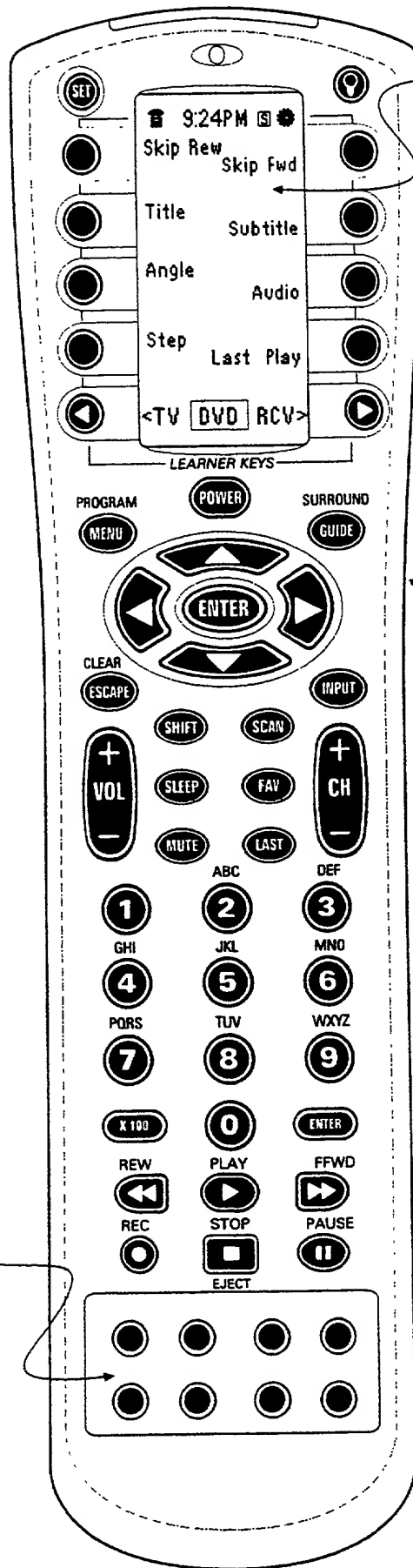
PRE-PROGRAMMED  
STANDARD KEYS

SNAP-ON CLEAR  
LENS

LABEL STRIPS PRE-PRINTED  
WITH COMMONLY REQUESTED  
FUNCTIONS ARE SUPPLIED  
WITH REMOTE.  
ALTERNATIVELY, USER CAN  
CUSTOMIZE LABEL ON PLAIN  
PAPER AND CUT THEM OUT.

RECESS AROUND CONFIGURABLE  
KEYS TO ACCOMODATE LABEL

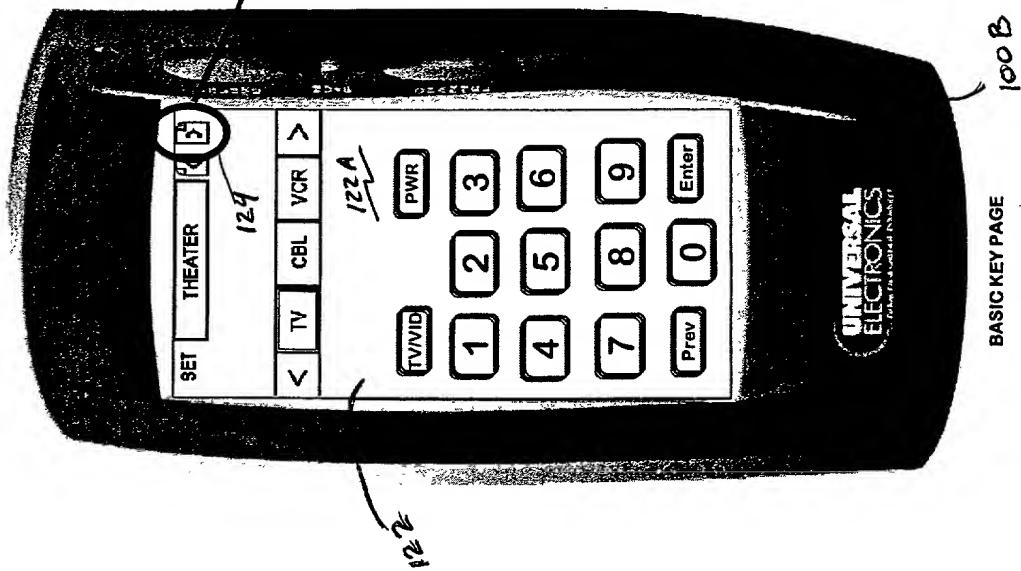
FIG. 10



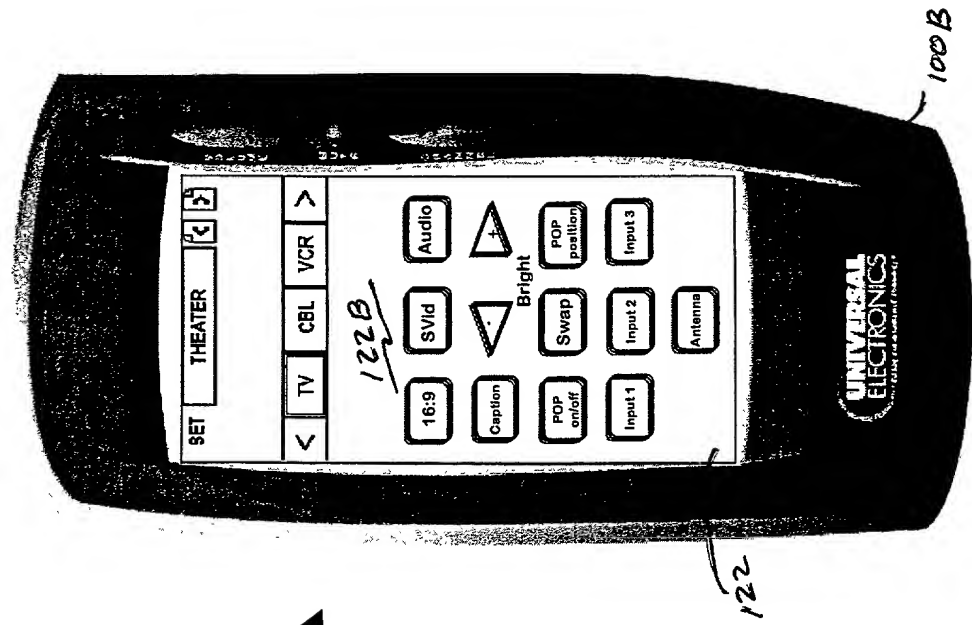
LCD DISPLAY IN LIEU OF  
PRINTED LABELS  
(CUSTOMER SELECTS  
DESIRED FUNCTIONS FROM  
AN ON-LINE DATA-BASE  
AND DOWNLOADS THEM INTO  
REMOTE)

OPTIONAL LABEL  
CUSTOMIZED KEYS

FIG. 11



BASIC KEY PAGE  
FIGURE 12



USER CUSTOMIZED KEY PAGE  
FIGURE 13

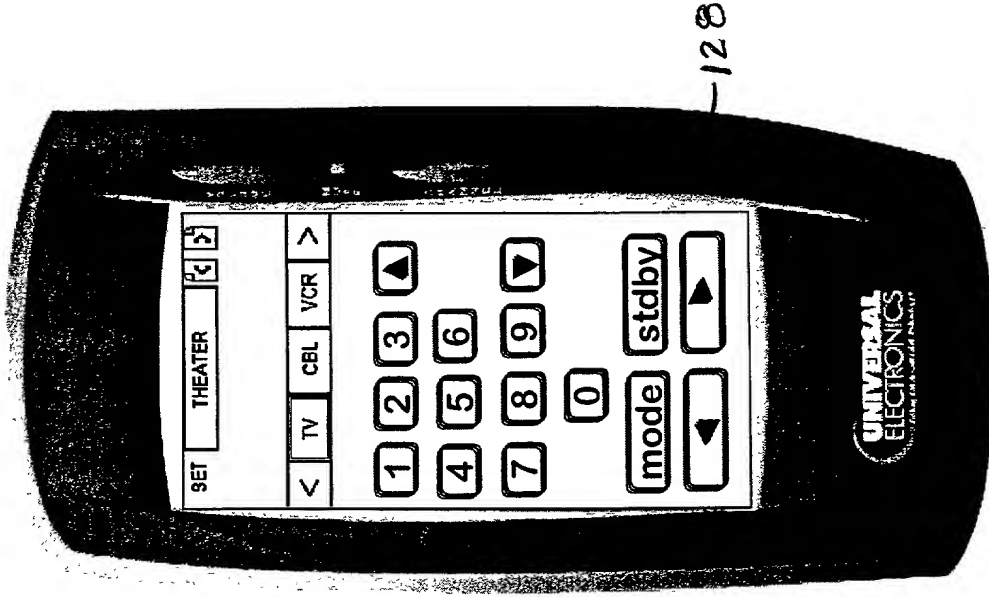
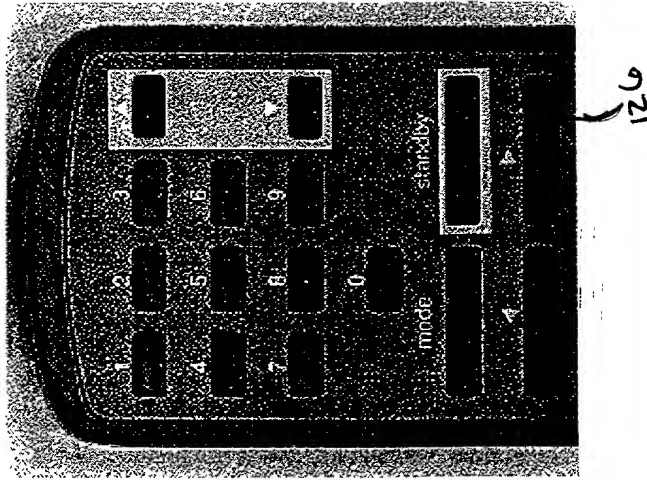
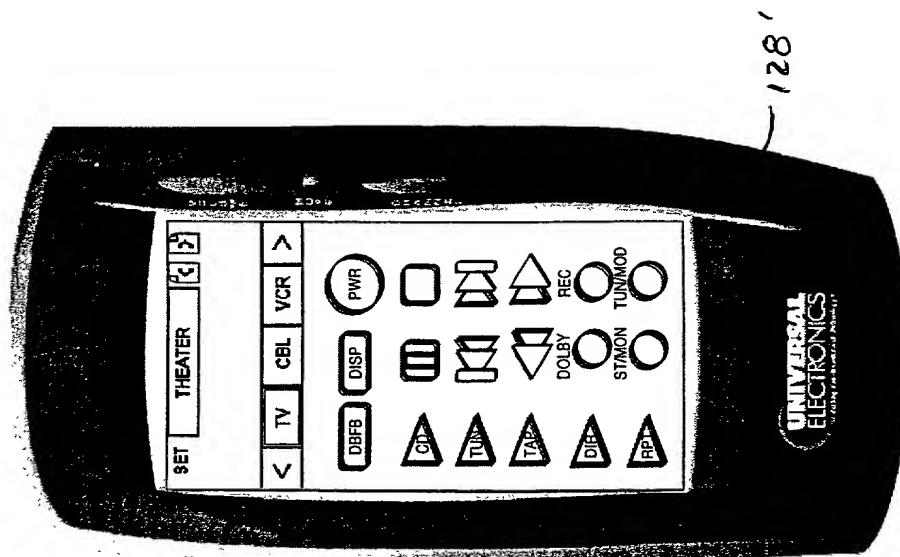
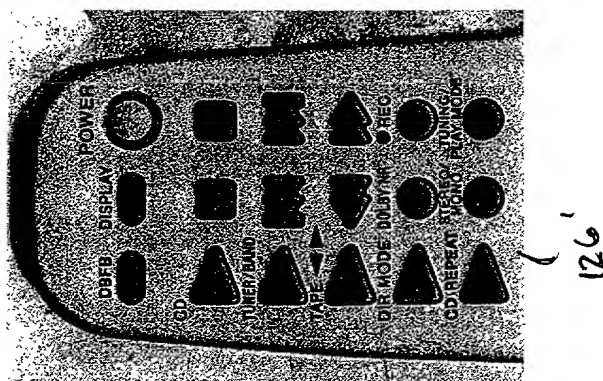


FIGURE 12  
14

Figure 1 is a schematic representation of the experimental design. It shows a vertical timeline of events. At the top, 'Pretest' is indicated. Below it, 'Baseline' is shown with a 'Pre' measurement. This is followed by a 'Training' period with 'Post' and 'Pre' measurements. Then, a 'Transfer' period is shown with 'Post' and 'Pre' measurements. Finally, a 'Retention' period is shown with 'Post' and 'Pre' measurements. The timeline is divided into sections by horizontal lines, and the measurements are indicated by arrows pointing to specific points on the timeline.



~~FIGURE 00~~ ~~15~~

005T 20" ECT5T500

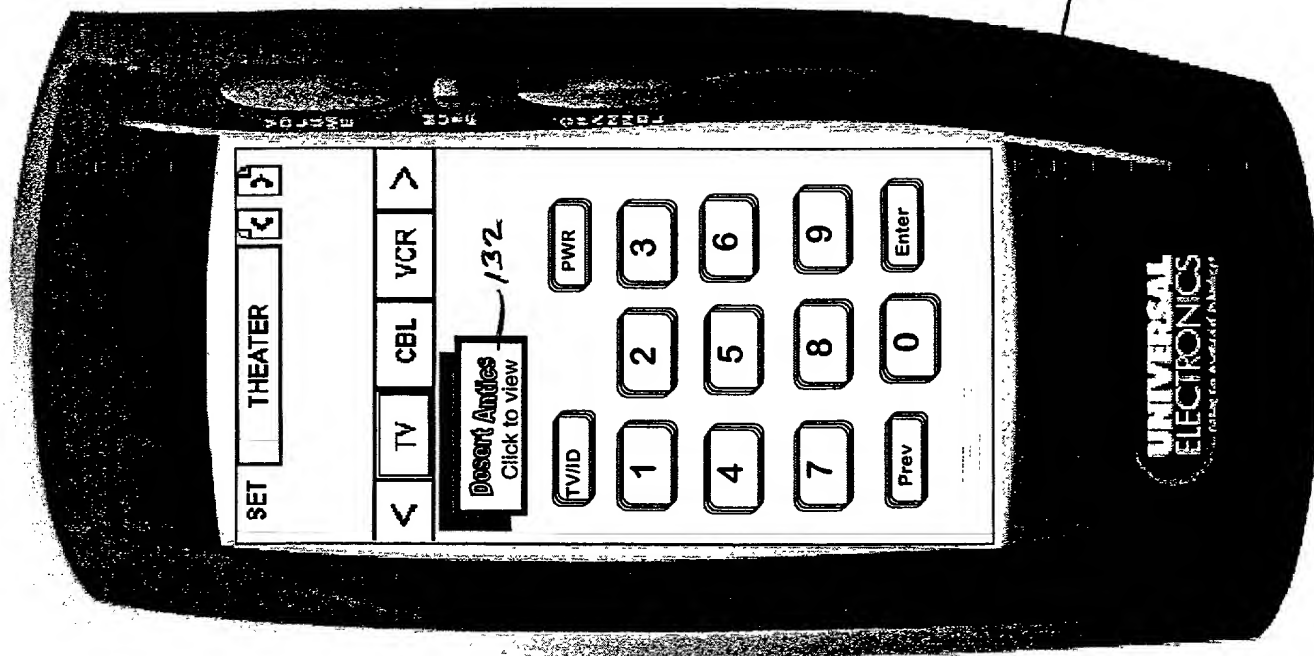
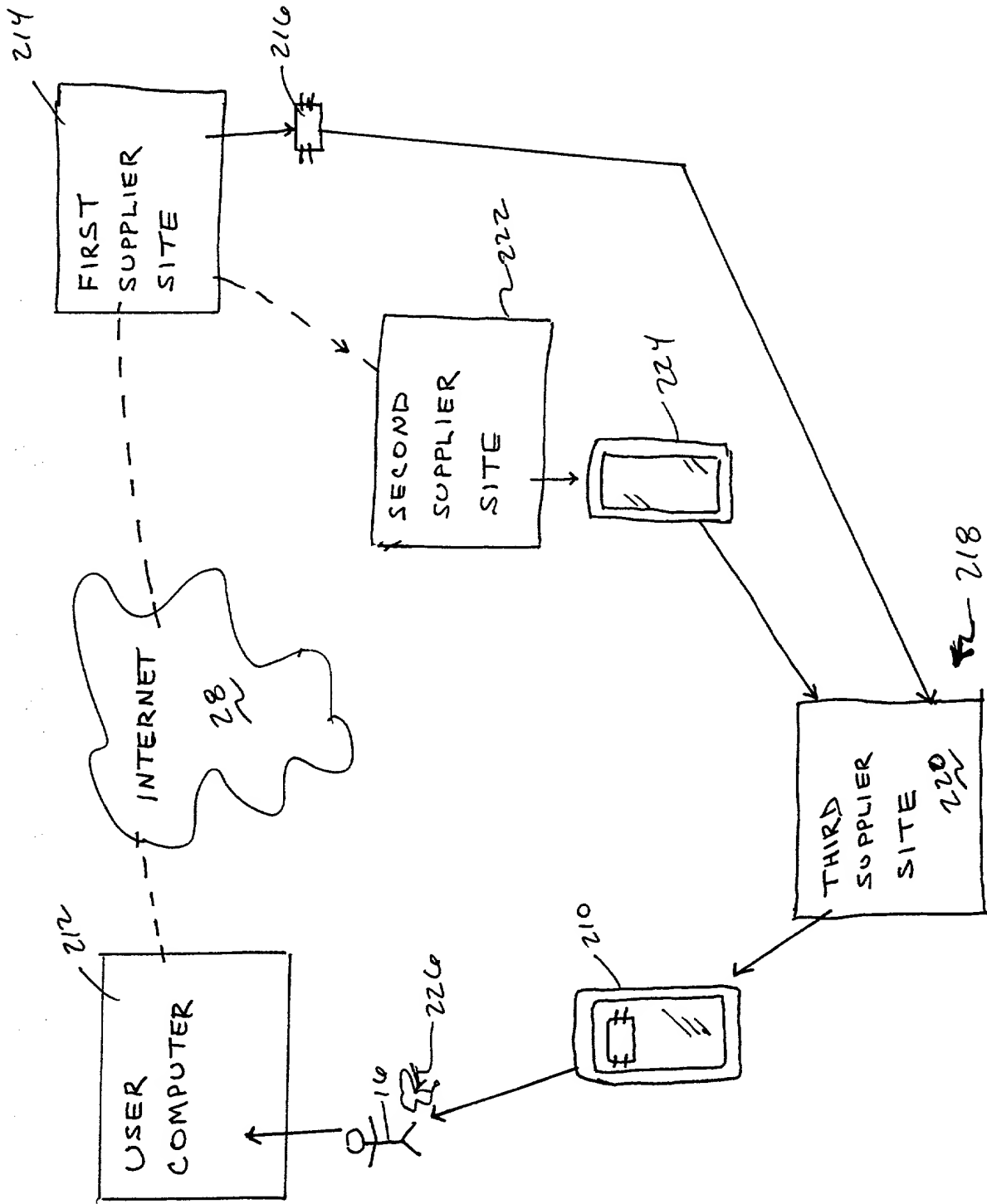


FIGURE EE  
16

130



11-19-17

## DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; that

I believe I am an original, joint inventor of the invention entitled "Customizable and Upgradable Devices and Methods Related Thereto" described and claimed in the attached specification.

I have reviewed and understand the contents of the specification, including the claims, in the above-referenced application, as amended by any amendment specifically referred to in the Declaration.

I acknowledge my duty pursuant to 37 C.F.R. §1.56 to disclose information of which I am aware which is material to the patentability of this application.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

None.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the

United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

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Inventor's signature:

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July 9 2000  
Date

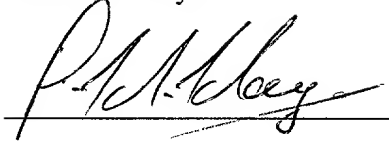
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Date

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Inventor's signature:



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